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UNDERSTANDING, MEASURING & REGULATING SUB-23 nm PARTICLE EMISSIONS FROM DIRECT INJECTION ENGINES INCLUDING REAL DRIVING CONDITIONS

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FOCUS

SURREAL-23 is about particulate emissions from light-duty Direct-Injection gasoline and diesel engines with a focus on nanoparticles smaller than the current regulation cut-off limit of 23 nm. The project, based on measurement practices beyond Euro-6, aims to extend this threshold to at least 10 nm.

OBJECTIVES

- Extend existing instrumentation by introducing size-specific composition characterization of the exhaust aerosol, especially for sub-23 nm particles
- Characterize in detail the nature of the particulate emissions which potentially evade current emission control technology and regulations
- Support future emissions compliance through technical developments in Real Driving Emissions measurement
- Contribute to future definitions of particulate emissions limits for “Super Low Emission Vehicles”

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INNOVATION

- Size and composition analysis methods suitable for transient engine emissions
- Novel instrumentation for measuring sub-23 nm aerosol particles, providing backward compatibility with established PN measurement technology
- Mitigation of problematic exhaust sampling requirements
- Integration of the most suitable components of the extended sub-23 nm measurement toolset into PEMS and application under real driving conditions

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